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A New Sea-star of Coscinasterinae from Toyama Bay

With 2 Text-figures

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ABSTRACT The new sea-star described in this paper belongs to Coscinasterinae and differs distinctly from the allied genera in having: inferomarginal spines without a cluster of attached crossed pedicellariae; superomarginal, inferomarginal as well as carinal plates bearing each an evident pebbling area on the surface; and much reduced ventrolateral plates. The new name *Calasterias toyamensis* is given for the new species.

Recently, I examined a number of small fissiparous specimens of asterioid. On closer examination, it became evident that these specimens belong to a form of Coscinasterinae. However, it has quite peculiar features not referable to any of the genera hitherto known. It is certainly an aberrant form and will be reported as a new genus of the subfamily.

The specimens were collected by Mr. Yasuo T. Kano, Uozu Aquarium, Uozu City, from off the city, 100–200 m in depth.

Calasterias gen. nov.

Diagnosis. Body hard, rays fissiparous, 6 or 7 in number and subpentagonal in cross section. Carinal, dorsolateral and marginal plates arranged in regular longiseries. Carinal plates 4-lobed, directly imbricated, and all spiniferous. Superomarginal and inferomarginal plates each with 2 spines entirely lacking a cluster of attached crossed pedicellariae. Inferomarginal and superomarginal plates bear each an evident pebbling area on the surface, and also the areas are situated on the carinals. Two adambulacral spines without attached pedicellariae. Ventrolateral plates much reduced. Crossed pedicellariae small, without terminal lateral enlarged teeth, and straight pedicellariae denticulate, various in size.

Type-species. *Calasterias toyamensis* sp. nov.

Remarks. The features of the present form are mostly related to those of Coscinasterinae, especially to the genera, *Sclerasterias*, *Astrometis* and *Astrostole*.

It is, however, different from these genera in having the reduced ventrolateral plates, though the skeleton is well developed. Evident pebbling areas are situated on the surface of inferomarginal plates as well as of the superomarginals. In *Sclerasterias*, *Astrometis*, *Astrosole* and also *Coscinasterias*, the superomarginal plate bears a similar beaded area on the surface, but none on the inferomarginal plate. The inferomarginal spines lack the attached crossed pedicellariae in the present form, but in the genera of *Coscinasterinae*, the inferomarginal spines usually carry a cluster of crossed pedicellariae. Such a form as the present specimens has not been known in the subfamily and seems to be an aberrant form no doubt new to science.

Calasterias toyamensis sp. nov.

Diagnosis. Body hard, rays fissiparous, 6 or 7 in number and subpentagonal in cross section. R 4 to 6.6r. Carinal, dorsolateral and marginal plates arranged in regular longiseries and directly imbricated. Carinal plates 4-lobed, armed with 3 spines, dorsolateral plate with 1 spine, and superomarginal plates with 2 similar spines. Spines without a thick wreath of crossed pedicellariae. Inferomarginal spines 2, the inner as well as the outer spine lacking attached crossed pedicellariae in a cluster. Inferomarginal as well as superomarginal plates bear each a pebbling area on the surface, and also the areas are found on the carinal plates. Two adambulacral spines without attached pedicellariae. Ventrolateral plates much reduced. Numerous crossed pedicellariae uniformly scattered on the dorsal surface. Crossed pedicellariae without terminal lateral enlarged teeth. Straight pedicellariae denticulate, various in size, abundant on the ventral surface. Type 6-rayed, R 30 mm, r 6 mm, and R 5r.

Description. The specimens examined measure as follows:

Rays in number	R	r	R:r	Notes
6	30 mm	6 mm	5	type-specimen
6	33 mm	5 mm	6.6	3 rays short, regenerating
6	23 mm	4 mm	5.7	3 rays short, regenerating
7	12 mm	3 mm	4	

Disc small, rays fissiparous, long and slender, 6 or 7 in number and subpentagonal in cross section, but not strictly. Body hard, dorsal skeleton well developed and covered with rather a thick skin. Carinal plates thick, 4-lobed, directly imbricated, arranged in a regular longiseries, and a small pebbling area is situated on the surface. The carinals bear each 3 short blunt spines measuring about 0.35 mm in length. The spines are each located on the low knob at the proximal lobe of the plate and the 2 lateral lobes. Dorsolateral plates well developed, more numerous than the carinals, more or less 3- or 4-lobed, directly imbricated, arranged in a somewhat irregular longiseries, and each with a spine similar to carinal spines. Papular areas small, arranged in 2 regular longiseries, each with mostly a small

papula. Numerous small crossed pedicellariae are uniformly scattered on the dorsal surface, and the dorsal spines each encircled by several crossed pedicellariae, without a thick wreath of them. The crossed pedicellariae lack terminal lateral enlarged teeth, measuring 0.15 to 0.19 mm in length.

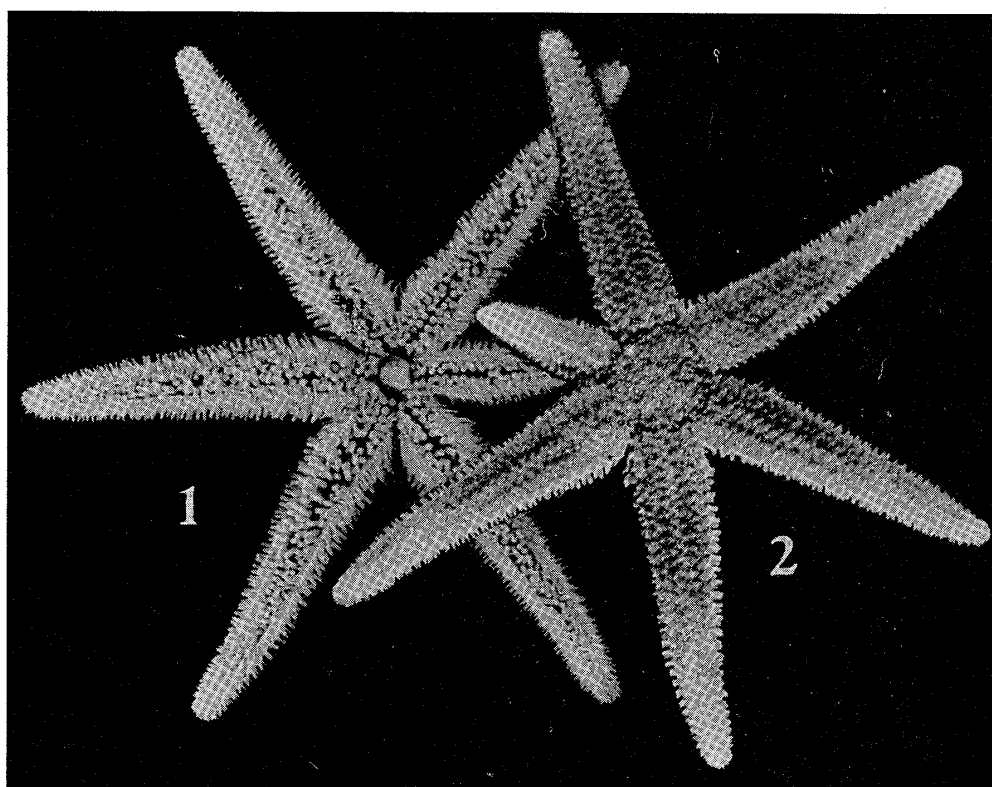


Fig. 1. *Calasterias toyamensis* sp. nov.—1. Oral side, 1.5 \times . 2. Aboral side of the same, 1.5 \times .

Superomarginal plates massive, wider than long, more or less 4-lobed, and the large descending lobe overlapping to each inferomarginal plate. The superomarginals are directly imbricated and arranged in a regular longiseries. An evident large pebbling area is situated on the surface. Each of these plates is armed with 2 small short spines, one of which is located on the proximal lobe of the plate and the other on the upper lobe. The spines are subsimilar to the dorsolateral spines, but very slightly stouter and encircled by several small crossed pedicellariae. Inferomarginal plates are smaller than the superomarginals, and each furnished with a pebbling area on the surface. The inferomarginals bear each 2 subequal flattened spines truncated at tip, measuring 0.8 to 1 mm in length. In the proximal portion of ray 3 spines may occur. The inner and the outer spines lack attached crossed pedicellariae. Intermarginal papular areas arranged in a regular longiseries, each with a papula. Numerous small crossed pedicellariae are scattered in the intermarginal area, and very small denticulate straight pedicellariae intermixed, measur-

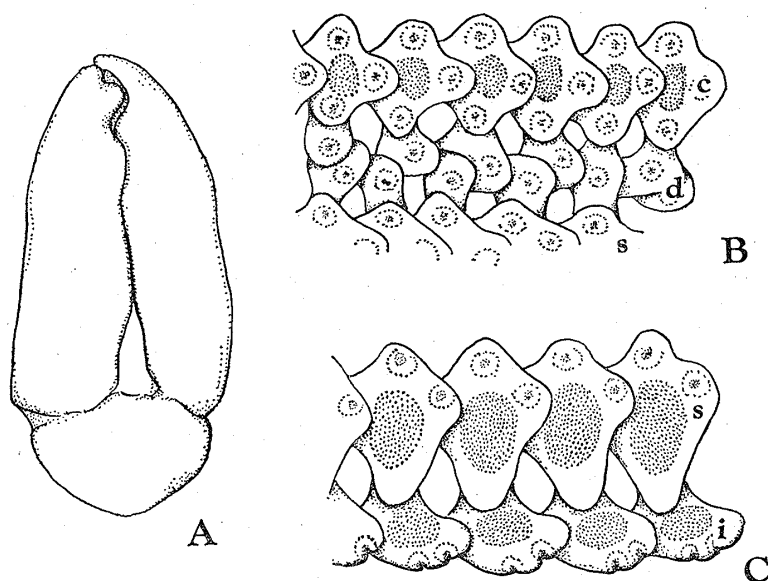


Fig. 2. *Calasterias toyamensis* sp. nov.—A. Oral straight pedicellaria, 60 \times . B. A portion of dorsal skeleton, about 10 \times . C. Marginal plates, about 10 \times . c, Carinal plate; d, dorsolateral plate; i, inferomarginal plate; s, superomarginal plate; dotted areas indicate the area of pebbling.

ing about 0.2 mm in length, but not numerous.

Ventrolateral plates exceedingly reduced. The inferomarginal plates are directly in contact with adambulacral plates, and only a few thin plates interpolated between them at arm base.

Adambulacral spines 2, subequal, flattened, truncated at tip and without attached pedicellariae. The inner spines are slightly short and slender. The mouth region is not sunken, and ambulacral furrow wide and shallow. Two oral spines, 1 for each plate, are situated deep in the oral region, which are compressed and truncated at tip. A pair of large suboral spines are at each mouth angle, which are similar to adambulacral spines and about twice as long as the oral spines. Behind the suboral spine is generally 1(2) similar spine, but the spine is often absent. A number of large denticulate straight pedicellariae are found on the mouth plate, various in size, and the large ones measure about 1 mm in length. Similar straight pedicellariae various in size are scattered in interradian and ventrolateral areas and also along furrow edge. Adoral carina composed of 2 pairs of plates, each with 1(2) spine.

Madreporite circular, situated nearer to the margin of disc than to the centre and guarded by several dorsal spines.

Colour in life brown with dark brown transverse patterns in ray.

Type in the Biological Institute, Toyama University.

Type-locality. Off the mouth of Hayatsuki River, Uozu City; 100 m in depth.

Japanese name. Toyama-yatsude-hitode.

REFERENCES

- Fisher, W. K., 1928. Asteroidea of the North Pacific and adjacent waters. Part 2. Forcipulata (part). *Bull. U. S. Natn. Mus.*, 76: 245 pp., 81 pls.
- Verrill, A. E., 1914. Monograph of the shallow-water starfishes of the North Pacific coast from the Arctic Ocean to California. *Smithsonian Inst., Harriman Alaska Ser.*, 14: 408 pp., 110 pls.
- Sladen, W. P., 1889. Report on the Asteroidea collected during the voyage of H. M. S. Challenger during the years 1873-76. *Rept. Sci. Res. Challenger, Zoology*, 30: 893 pp., 117 pls.